at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v3)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{45}$ $\sqrt{12}$ $\sqrt{28}$

$\sqrt{3 \cdot 3 \cdot 5}$ $\sqrt{2 \cdot 2 \cdot 3}$ $\sqrt{2 \cdot 2 \cdot 7}$

$3\sqrt{5}$ $2\sqrt{3}$ $2\sqrt{7}$

Question 2

Find all solutions to the equation below:

$$\frac{(x+7)^2}{9} - 7 = 2$$

First, add 7 to both sides.

$$\frac{(x+7)^2}{9} = 9$$

Then, multiply both sides by 9.

$$(x+7)^2 = 81$$

Undo the squaring. Remember the plus-minus symbol.

$$x + 7 = \pm 9$$

Subtract 7 from both sides.

$$x = -7 \pm 9$$

So the two solutions are $x = 2$ and $x = -16$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 - 10x = -9$$

Take the linear coefficient, -10, halve it and square the result. You should get 25. Add this to both sides of the equation to complete the square.

$$x^2 - 10x + 25 = -9 + 25$$

$$x^2 - 10x + 25 = 16$$

Factor the perfect-square trinomial.

$$(x - 5)^2 = 16$$

$$x - 5 = \pm 4$$

$$x = 5 \pm 4$$

$$x = 9 \quad \text{or} \quad x = 1$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 - 16x + 25$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 - 8x) + 25$$

We want a perfect square. Halve -8 and square the result to get 16 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 - 8x + 16 - 16) + 25$$

Factor the perfect-square trinomial.

$$y = 2((x - 4)^2 - 16) + 25$$

Distribute the 2.

$$y = 2(x - 4)^2 - 32 + 25$$

Combine the constants to get **vertex form**:

$$y = 2(x - 4)^2 - 7$$

The vertex is at point $(4, -7)$.